



Energy-efficient air-conditioners in India: Policies, Consumer Perceptions and Opportunities

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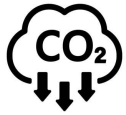
India's Star labelling programme has been instrumental in transforming the market of energy-efficient products



11 mandatory appliances

56 Billion units electricity saved during FY 21 (\$ 3.6 billion)

46 Billion Units electricity saved till 2017 in room AC segment

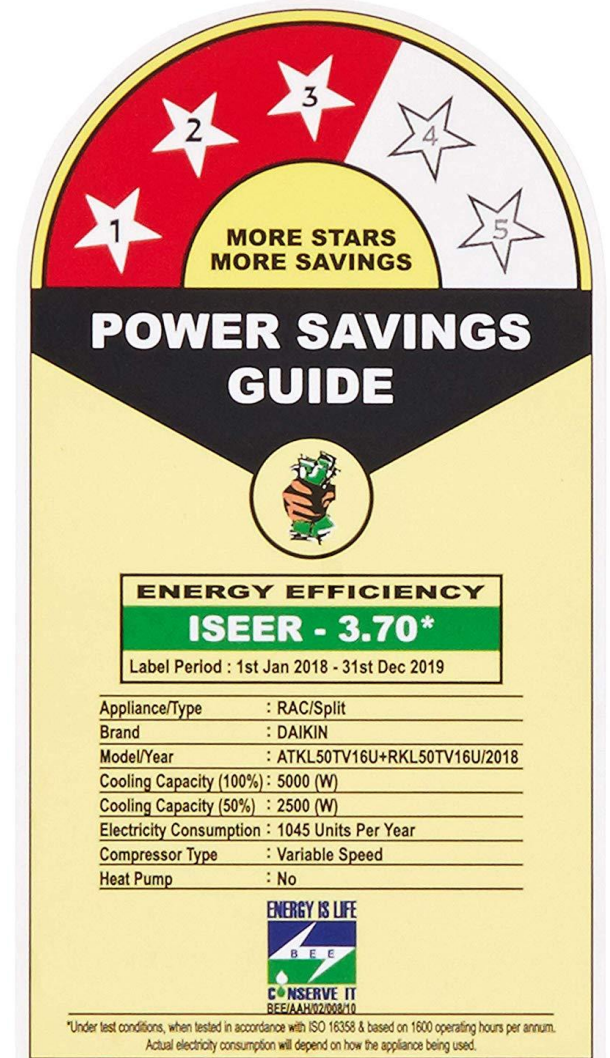


46 million tonnes CO₂ emissions avoided per annum

38 million tonnes CO₂ avoided till 2017 in room AC segment



Energy-efficiency improvement in split ACs of 43 percent (1-star) and 61 percent (5-star models)



Cooling appliances covered (Mandatory)

Room Air Conditioner

(Variable and fixed Speed, Cassette, Floor Standing Tower, Ceiling, Corner AC)

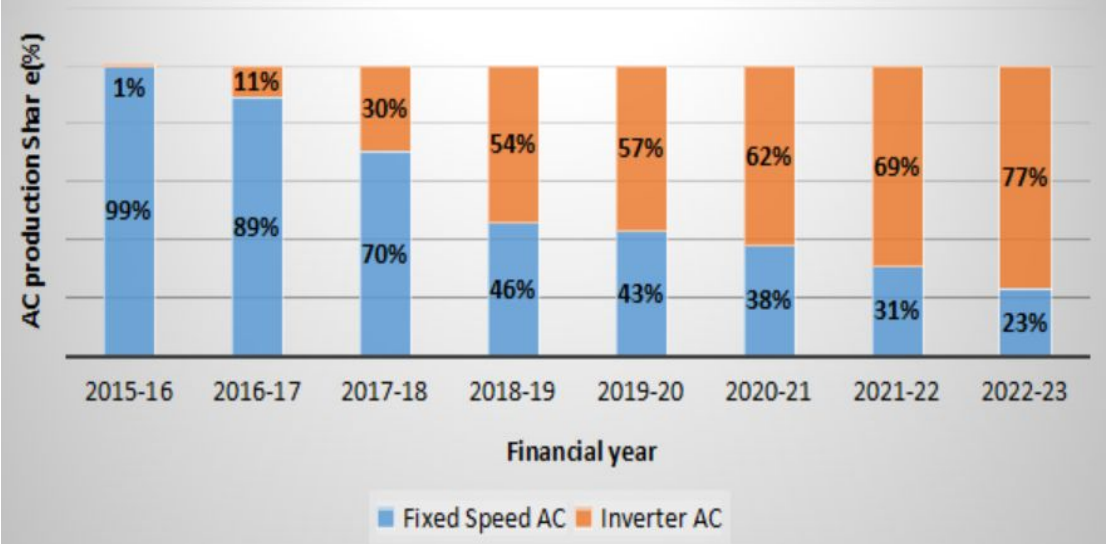
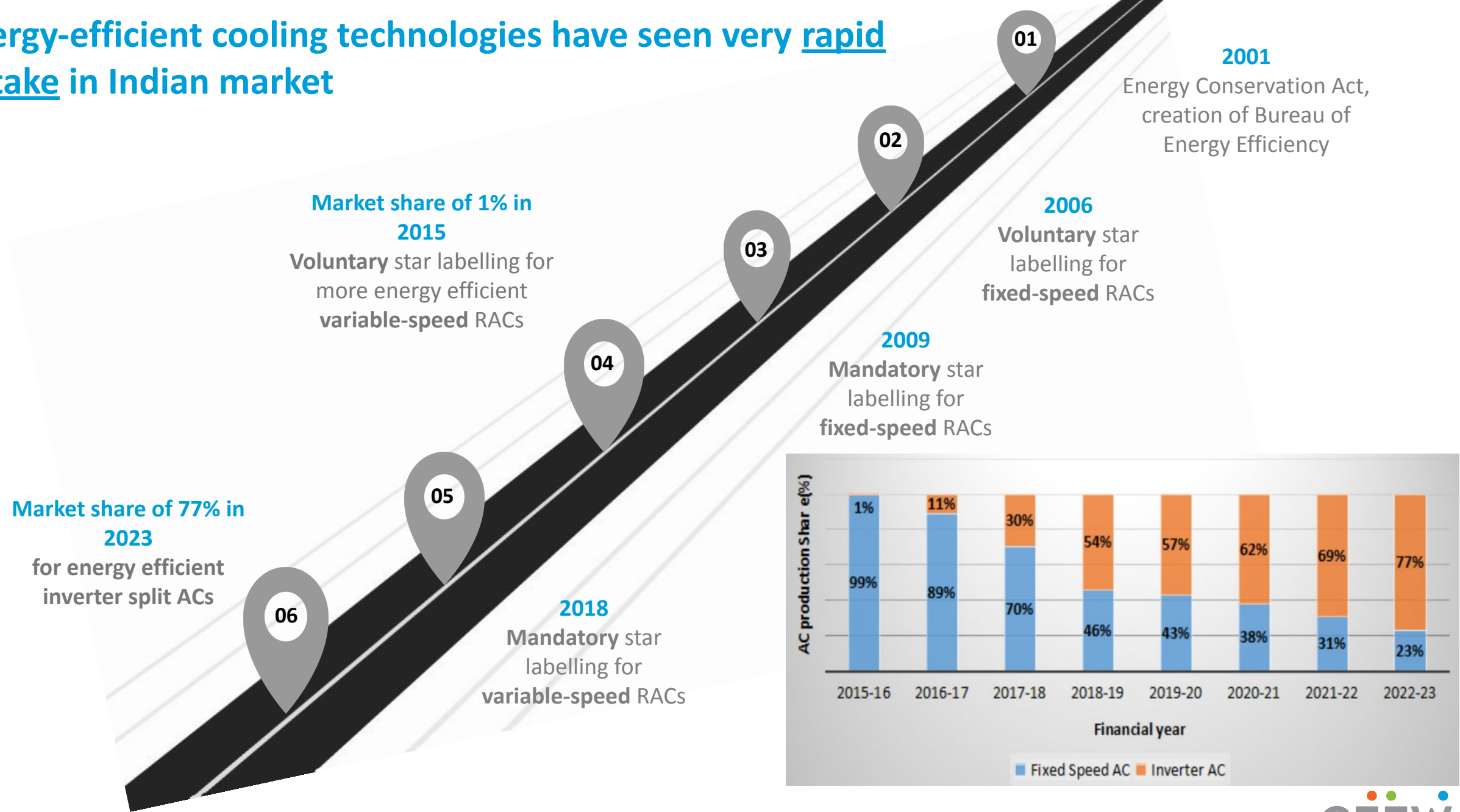
Ceiling Fan

Refrigerator (Frost free and direct cool)

Chillers and deep freezers

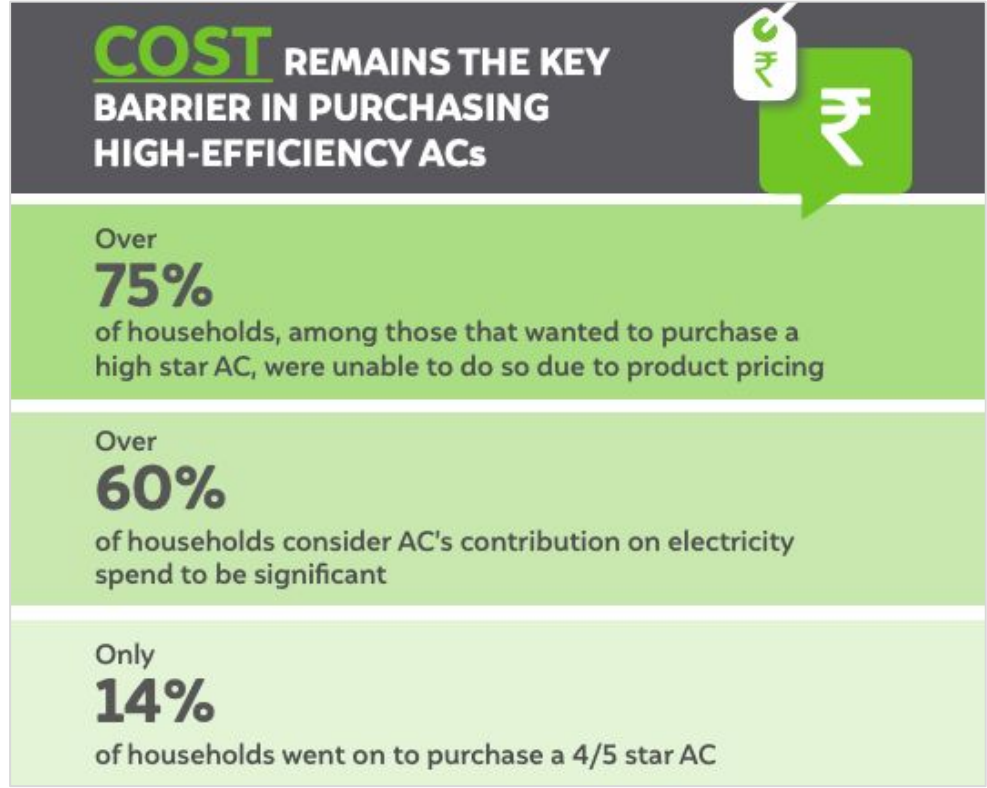
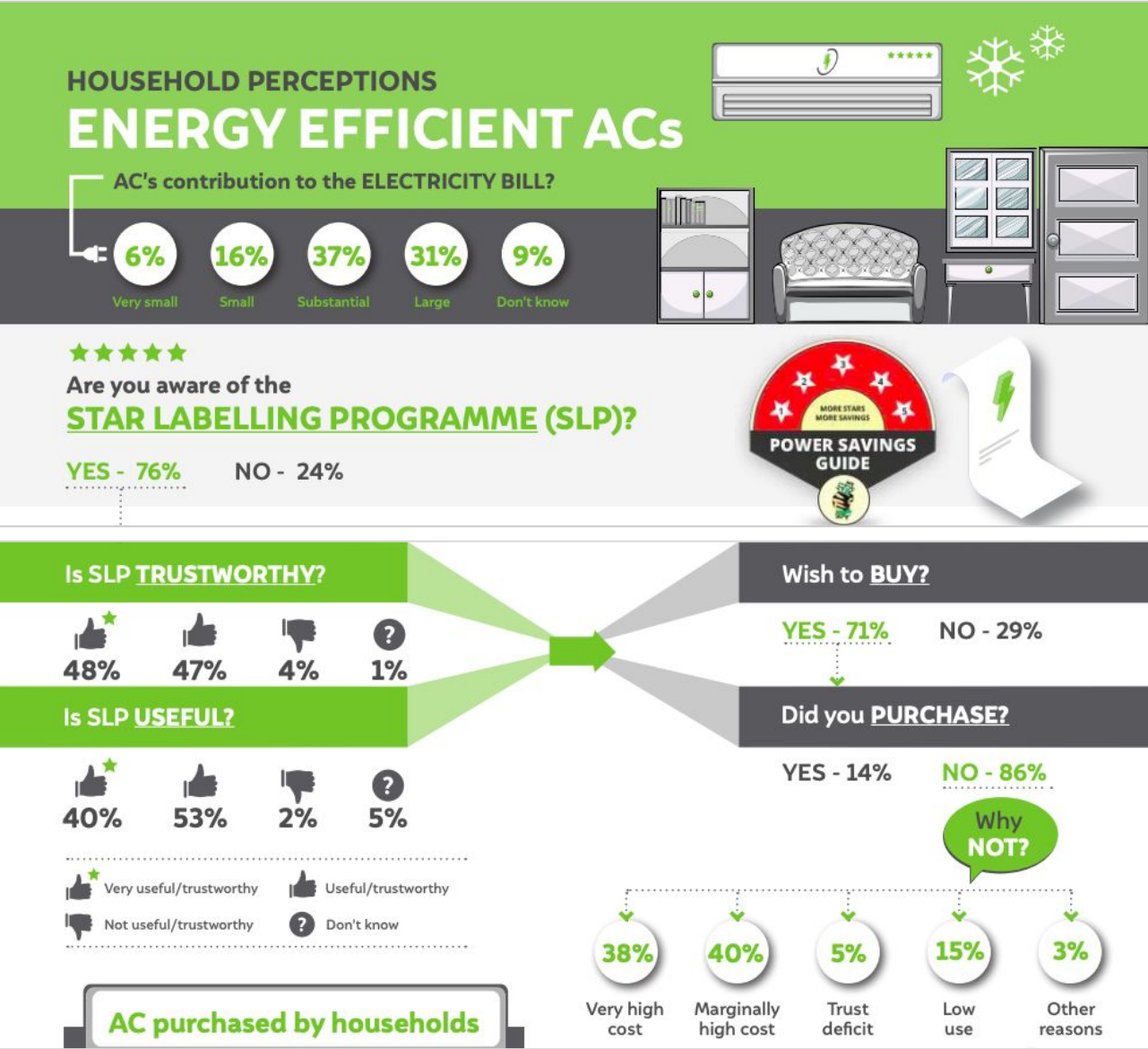
(w.e.f. 01.01.2024)

Energy-efficient cooling technologies have seen very rapid uptake in Indian market



Source: BEE annual reports; Press Information Bureau (2023)

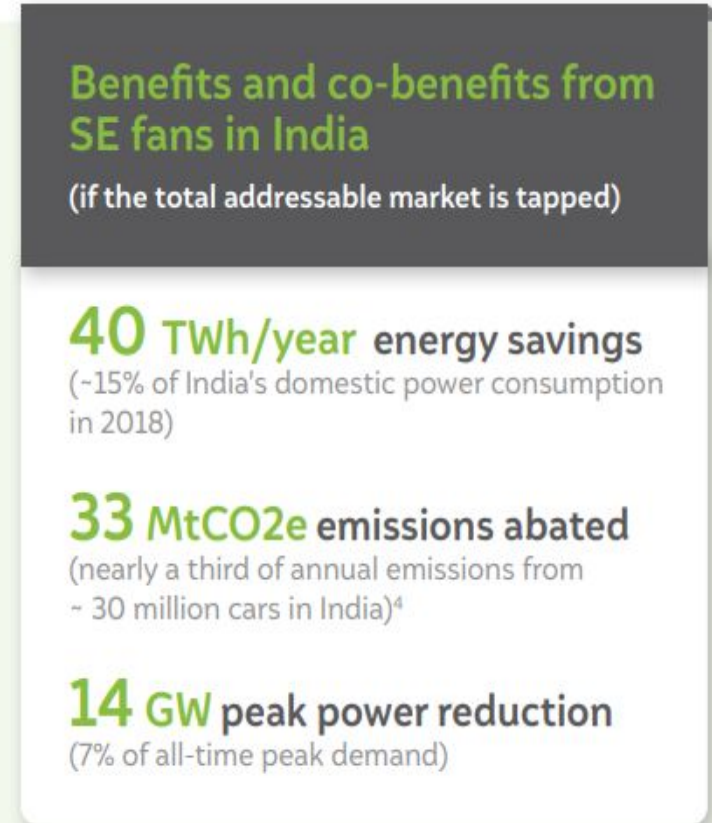
Household awareness about AC energy labels has been high but upfront cost of efficient units is a barrier



- BRANDING, PRICING, TONNAGE, STAR LABELLING AND DESIGN AESTHETICS are among the key attributes considered for an AC purchase.
- A large number of households take decisions on these attributes even AT THE TIME OF PURCHASE
- SALES PERSONS ARE AMONG THE TOP FIVE SOURCES OF INFORMATION that households rely on to make their AC purchase decisions.

3 | Source: CEEW (2020). Do Residential AC Buyers Prioritise Energy Efficiency? Indian Consumer Perceptions and Purchases. <https://www.ceew.in/publications/do-residential-ac-buyers-prioritise-energy-efficiency>

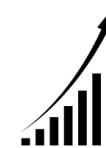
Super efficient ceiling fans present a low-hanging, high-impact opportunity for energy savings in the Indian context



~3 percent penetration of super efficient fans



Mandatory star-labelling from 2022



Market transformation:
Deployment of **10 million EE fans** by EESL in 2023

Annexures

Other levers to accelerate energy-efficient cooling



Market transformation via EESL

- Increasing affordability and accessibility to energy efficient cooling solutions
- World's largest energy efficiency portfolio



Bulk procurement of EE cooling appliances (mandatory) and NSQF certified technicians (underway) for govt. buildings



Energy Conservation Building Codes



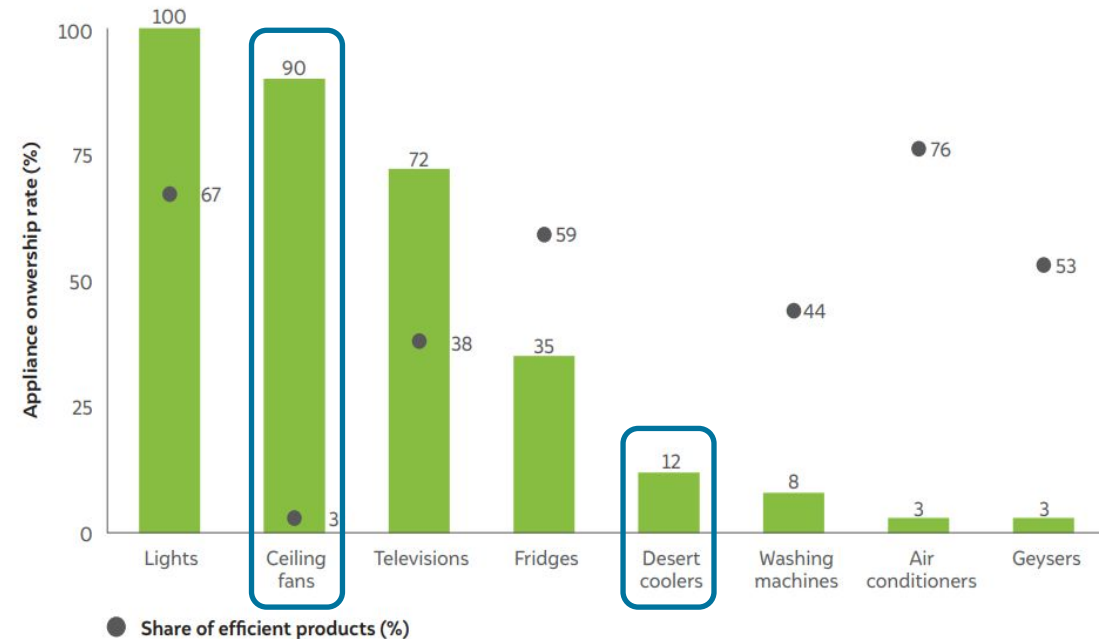
Training and certification of service technicians

- Recognition of prior learning programmes (12-80 hours)
- Short-term training (2-6 months)
- Pay-out to candidates under *Pradhan Mantri Kaushal Vikas Yojana*







Public awareness programmes

Share of efficient products among owners of star labelled appliances in India



Technology market share and refrigerant trends

		2022-23		2027-28		2037-38	
		Market share (% of total TR)	Refrigerant	Market share	Refrigerant	Market share	Refrigerant
	Room AC	85	R-32, R-410A	87	R-32, R-290 (?)	88	20 per cent GWP reduction to be achieved
	VRF Systems	7	R-410a	6	R-410a, R-454B	5	
	Chillers	4	R-410A, R-123	4	R-134A, R-513A, R-514A, R-1233zd	5	
	Ducted DX	4	R-410a	3	R-32, R-454B	2	

India Cooling Action Plan

Concrete targets
(2037-38)



Reduction in cooling demand



Reduction in refrigerant demand

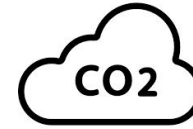


Reduction in cooling energy requirements

Integrated cross-sectoral approach



Sustainable cooling potential in India



High mitigation potential

435 per cent increase in GHG emissions from the sector by 2040

Potential to reduce ~300 million tonnes CO2 annually by 2040

Phase-out of high-GWP refrigerants



Opportunity for jobs and industrial growth

Low penetration of RACs: ~10 per cent Indian households

Low penetration of energy efficient fans ~3 per cent

1.6 trillion USD investment potential in energy efficient cooling

3.6 million new jobs